UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/922,220 | 08/03/2001 | Israel Rubinstein | U 013579-0 | 8917 |

140 7590 08/04/2005

LADAS & PARRY
26 WEST 61ST STREET
NEW YORK, NY 10023

| EXAMINER | |
|---|---|
| ALEXANDER, LYLE | |
| **ART UNIT** | **PAPER NUMBER** |
| 1743 | |

DATE MAILED: 08/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Interview Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/922,220 | RUBINSTEIN ET AL. | |
| | Examiner | Art Unit | |
| | Lyle A. Alexander | 1743 | |

All participants (applicant, applicant's representative, PTO personnel):

(1) *Lyle A. Alexander*. (3)_____.

(2) *Mr. Cohen*. (4)_____.

Date of Interview: *02 August 2005*.

Type: a)☒ Telephonic b)☐ Video Conference
c)☐ Personal [copy given to: 1)☐ applicant 2)☐ applicant's representative]

Exhibit shown or demonstration conducted: d)☐ Yes e)☒ No.
If Yes, brief description: _____.

Claim(s) discussed: *all*.

Identification of prior art discussed: *all*.

Agreement with respect to the claims f)☐ was reached. g)☒ was not reached. h)☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: *Applicants' proposed the attached amendments and arguments. If these amendments were formally submitted, they would not be entered because they raise new issues that would require further consideration and search. However, the new limitations specifying the electromagnetic radiation passes through the substrate may overcome the art of record. A further search would be made in light of any amendments.*.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Lyle A. Alexander
Examiner's signature, if required

# Summary of Record of Interview Requirements

**Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record**
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

**Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews**
Paragraph (b)
In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

---

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

**Examiner to Check for Accuracy**

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

LAW OFFICES

**LADAS & PARRY LLP**

26 WEST 61ST STREET
NEW YORK, NY 10023-7604

TELEPHONE: (212) 708-1800
FACSIMILE: (212) 246-8959
(212) 246-8925

E-MAIL: NYMAIL@LADASPARRY.COM
INTERNET: http://www.ladas.com

Julian H. Cohen
Writer's Telephone: (212) 708-1887
E-mail: jcohen@ladasparry.com

224 SOUTH MICHIGAN AVENUE
CHICAGO, IL 60604

5670 WILSHIRE BLVD.
LOS ANGELES, CA 90036

52-54 HIGH HOLBORN
LONDON WC1V 6RR, ENGLAND

DACHAUERSTRASSE 37
80335 MUNICH, GERMANY

July 28, 2005

VIA FACSIMILE
FACSIMILE NO.: 571-273-1254

TO: The Examiner

FROM: Julian Cohen

RE: DRAFT SUBMISSION
Israel RUBINSTEIN et al.
U.S. Application No. 09/922,220
Filed: August 3, 2001
Our Ref.: U 013579-0

Please see the attached.

Thank you.

*PATENT*

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of: Israel RUBINSTEIN et al.

Serial No.: 09/922,220 Group No.: 1743

Filed: August 3. 2001 Examiner: Lyle Alexander

For: METHOD AND APPARATUS FOR DETECTING AND QUANTIFYING A CHEMICAL SUBSTANCE EMPLOYING AN OPTICAL TRANSMISSION PROPERTY OF METALLIC ISLANDS ON A TRANSPARENT SUBSTRATE

Attorney Docket No.: U 013579-0

# DRAFT SUBMISSION OF CLAIM AMENDMENTS AND ARGUMENTS

**CERTIFICATE OF MAILING/TRANSMISSION (37 CFR 1.8a)**

I hereby certify that this correspondence is, on the date shown below, being:

**MAILING**

☐ deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450

**FACSIMILE**

☒ transmitted by facsimile to the Examiner

Date: July 28, 2005

This submission is made for the purpose of discussing the case with the Examiner on August 2, 2005 and is not to be entered as part of the record.

A follow-up formal response will be made following the interview.

IN THE CLAIMS

Proposed Claim Amendments

1. (Currently Amended) A method for analysis comprising:

transmitting electromagnetic radiation of a predetermined wavelength range through a first structure substantially transmitting with respect to said electromagnetic radiation, said first structure comprising a substantially transparent substrate carrying a plurality of spaced-apart metallic islands ~~located on at least one surface of a transparent substrate and said transparent substrate;~~, detecting ~~generating a first optical property measurement of~~ a transmission of said ~~transmitted~~ electromagnetic radiation through said first structure, and generating a first measurement indicative of a response of said first structure to said electromagnetic radiation, said first measurement being representative of a surface plasmon absorption of said first structure ~~following passage of said electromagnetic radiation through said metallic islands and through said transparent substrate~~;

adsorbing a chemical substance onto said plurality of metallic islands so as to produce a second structure substantially transmitting with respect to said electromagnetic radiation and having a second different plasmon absorption characteristic, said second structure comprising a chemical substance-metallic islands moiety on said transparent substrate~~;~~, transmitting the electromagnetic radiation through said ~~chemical substance-metallic islands moiety and said~~

~~transparent substrate~~second structure~~;~~, detecting transmission of said second structure to said electromagnetic radiation, and generating a second ~~optical property~~ measurement indicative of a response of said second structure to said electromagnetic radiation, the second measurement being representative of the surface plasmon absorption of said second structure ~~transmitted radiation following passage of said electromagnetic radiation through said chemical substance-metallic islands moiety and said transparent substrate~~; and

employing said first and second ~~optical property~~ measurement of the surface plasmon absorption of the first and second structures, respectively, ~~and said first optical property measurement~~ to provide at least one of a quantitative indication and a qualitative indication of at least one of the following: said chemical substance-metallic islands moiety, a functionality of said chemical substance-metallic islands moiety, said plurality of metallic islands, a functionality of said plurality of metallic islands, said chemical substance and a functionality of said chemical substance.

103 (Currently Amended) Apparatus for analysis comprising:

a first structure substantially transmitting with respect to electromagnetic radiation of a predetermined wavelength range to be measured, said first structure consisting of a transparent substrate carrying ~~an adsorption enabling element operative to enable adsorption of a chemical substance onto a plurality of metallic islands on a transparent substrate so as to produce~~ a first chemical substance-metallic islands moiety formed by a plurality of spaced-apart metallic islands on the surface of said substrate and the first chemical substance adsorbed to said surface, wherein said first structure has a certain surface plasmon absorption characteristic with respect to said electromagnetic radiation defining the first structure transmission profile for the wavelength

range to be measured, and wherein said first chemical substance is selected to adsorb thereon one or more second chemical substances to form a second chemical substance-first chemical substance-metallic islands moiety on said substrate, thereby enabling formation of a second structure substantially transmitting with respect to said wavelength range and consisting of said substrate carrying the second chemical substance-first chemical substance-metallic islands moiety and having a different surface plasmon absorption characteristic defining a different transmission profile as compared to that of the first structure;

a transmitter configured and operative to transmit the electromagnetic radiation of said predetermined wavelength range through ~~said~~the ~~plurality of metallic islands and said transparent substrate~~structure ~~and which is further operative to transmit electromagnetic radiation through said chemical substance-metallic islands moiety and said transparent substrate~~;

a detector oriented with respect to the structure and said transmitter ~~adapted~~ and configured to detect the electromagnetic radiation of said wavelength range transmitted through the structure, and to generate a ~~first optical property~~ measurement of the structure transmission profile~~said plurality of metallic islands, and further configured to generate a second optical property measurement of metallic islands in said chemical substance-metallic islands moiety~~; and

a processor operative to receive the measurement, analyze the transmission profile of the structure under measurements, and ~~employ said first optical property measurement and said second optical property measurement to~~ provide at least one of a quantitative indication and a qualitative indication of at least one of: said first chemical substance-metallic islands moiety, a functionality of said first chemical substance-metallic islands moiety, said plurality of metallic islands, a functionality of said plurality of metallic islands, said first chemical substance and a functionality of said first chemical substance, said second chemical substance-first chemical

substance-metallic islands moiety, a functionality of said second chemical substance-metallic islands moiety, said second chemical substance and a functionality of said second chemical substance.

Claim 178 will be amended commensurate with claim 103.

Claim 209 (New) A sensor device for use in detecting and analyzing at least one predetermined chemical substance by measuring a transmission profile of a structure carrying said predetermined chemical substance, the device comprising:

a first structure substantially transmitting with respect to electromagnetic radiation of a predetermined wavelength range to be measured, the first structure consisting of a transparent substrate carrying a first chemical substance-metallic islands moiety formed by a plurality of spaced-apart metallic islands on the surface of said substrate and the first chemical substance adsorbed to said surface,

wherein said first structure has a first characteristic of a surface plasmon absorption with respect to said electromagnetic radiation defining the structure transmission of said electromagnetic radiation, and

wherein said first chemical substance is selected to be capable of adsorbing thereon said at least one predetermined chemical substance;

the device thereby enabling formation of a second structure substantially transmitting with respect to said electromagnetic radiation, the second structure consisting of said substrate carrying the predetermined chemical substance-first chemical substance-

metallic islands moiety, and having a second characteristic of a surface plasmon absorption with respect to said electromagnetic radiation defining a different transmission profile of the second structure, thereby providing the detection of said predetermined substance by detecting a difference in the transmission profile of the second structure as compared to that of the first structure.

## REMARKS

Claims 1 and 103, the basic method and apparatus claims, have been rejected on cited art because the claims are not consistent with the arguments. However, the invention is distinguished in fundamental respect fro the cited art in that the invention is based on transmission characteristics of electro magnetic radiation whereas the cited art is concerned with a change in fluorescence or a reflection caused by a change in optical thickness due to deformation of a polymer support layer.

Amended claims 1 and 103 are more specific to the method and apparatus utilizing features from existing claims and not raising new issues.

It is also proposed to cancel claims 182-208 and replace them with "sensor" claim 209.

1. The Examiner has rejected Claims 1-29, 32-66, 103-128, 131-137, 176 and 178 under 35 U.S.C. 102(b) as being anticipated by US 5,866,433 or US 5,611,998. In this connection, the Examiner's attention is respectfully drawn to the following:

1.1 The invention:

The invention provides a method and apparatus for detecting/analyzing one or more

chemical substances. This is implemented by providing a device in the form of a structure (first structure) substantially transmitting electromagnetic radiation of a predetermined wavelength range to be measured. The structure **consists of a transparent substrate carrying a first chemical substance-metallic islands moiety**. The first moiety is formed by a plurality of spaced-apart metallic islands on the surface of said substrate and the first chemical substance adsorbed to said surface. This structure has a **certain (first) characteristic of a surface plasmon absorption with respect to electromagnetic radiation of a certain wavelength range, defining the structure transmission profile for said predetermined wavelength range**. This first chemical substance is selected to be capable of adsorbing thereon at least one predetermined chemical substance. Adsorption of this chemical substance will result in the formation of a second structure consisting of said substrate carrying the predetermined chemical substance-first chemical substance-metallic islands moiety, and having a second different characteristic of a surface plasmon absorption with respect to said electromagnetic radiation. Thus, the predetermined substance can be detected by detecting a difference in the transmission profile of the second structure as compared to that of the first structure.

The apparatus of the invention thus utilizes the first structure (as described above) and the appropriately configured and operable light transmitter and detector, and a processor for analyzing the detected light transmission profile indicative of a response of the structure to the electromagnetic radiation depending on the surface plasmon absorption.

US' 433 discloses a sensor based on the use of a transparent substrate carrying an array of metallic islands and a biorecognitive layer of a fluorescent material. The latter is selected to adsorb certain substance(s) such that the fluorescent response from the sensor with the adsorbed substance significantly increases. This technique utilizes an effect of and a measurement of a change in the fluorescence from the sensor with the certain substance adsorbed thereon.

On the contrary, the invention utilizes a change in the structure's transmission profile for a predetermined wavelength range caused by a change in the surface plasmon absorption of the structure when one or more certain substance is adsorbed thereon.

1.3 US 5,611,998

US'998 discloses a sensor device based on the use of an array of metallic islands on a substrate structure. Here, he substrate structure is a stack formed by a mirror layer and a polymer layer on top thereof. Metallic islands are carried by the polymer layer. According to this technique, the polymer layer deforms when exposed to certain chemical environment. The deformation of the polymer layer affects the reflection from the sensor caused by a change in the optical thickness between reflector and metallic islands.

On the contrary, the invention utilizes a sensor structure substantially transmitting a wavelength range to be measured, and consisting of a transparent substrate carrying an array of metallic islands and a certain first chemical substance (first chemical substance-metallic islands moiety); and utilizes an effect of a change in the structure's transmission profile for said wavelength range caused by a change in the surface plasmon absorption of the structure when

one or more second substance is adsorbed thereon.

Because of the fundamental differences between the characteristics which are measured and the way in which they are measured, the references are not anticipatory or suggestive of the invention.

Allowance of amended claims 1, 103 and new claim 209 is therefore considered to be warranted.

Respectfully submitted,

JULIAN H. COHEN
c/o Ladas & Parry LLP
26 West 61st Street
New York, New York 10023
Reg. No. 20302
Tel. No. (212) 708-1887